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Mainland-Southwest – Region 2

Greater Vancouver Regional District
Transportation Committee Recommendations

FREEDOM TO MOVE

89-06248/

GREATER VANCOUVER TRANSPORTATION TASK FORCE

TABLE OF CONTENTS

VOLUME I - SUMMARY REPORT

PREFACE		vi
1.0	INTRODUCTION	1
	1.1 Background to study	1
	1.2 Formation of the Task Force	
	1.3 Timing	3
2.0	ESTABLISHING THE FRAMEWORK	3
	2.1 Overview of Greater Vancouver	3
	2.2 Regional Development Goals and Strategy	4
	2.3 Regional Transportation Strategy	5
	2.4 Population Forecasts	6
	2.5 Employment Forecasts	7
	2.6 Alternative Land Use Scenarios	7
3.0	GOODS MOVEMENT	8
	3.1 Goods Movement Working Group	8
	3.2 Trends in Goods Movement	8
	3.3 Obstacles to More Effective Goods Movement	9
4.0	CURRENT AND FUTURE TRANSPORTATION DEMAND	10
	4.1 Existing Road Network	10
	4.2 Existing Transit Network	11
	4.3 Committed Transportation Network Improvements	12
	4.4 Existing Travel Characteristics	13
	4.5 Future Traffic Patterns	14
5.0	NETWORK ALTERNATIVES	16
	5.1 Identifying Candidate Projects	16
	5.2 Candidate North Shore Sector Projects	17
	5.3 Candidate Burrard Peninsula Sector Projects	18
	5.4 Candidate South Fraser Sector Projects	19
	5.5 Candidate North East Sector Projects	20
	5.6 Evaluating the Alternatives	21

6.0 RECOMMENDED TRANSPORATION PLAN 22

6.1 2001 Road Network 22
6.2 Major New Road Network Facilities Beyond 2001 22
6.3 Links to Adjacent Regional Districts 23
6.4 2001 Transit Network 23
6.5 Phasing of 1991-1996 Transportation Network Improvements 23

7.0 POLICY ISSUES 24

8.0 RECOMMENDATIONS

8.1 Government Policy
8.2 Improvements to Public Transit
8.3 Road Network Improvements 1991-1996
8.4 Road Improvements 1997-2001
8.5 Longer Term Facilities
8.6 Peripheral Facilities
8.7 Other Matters

VOLUME I - SUMMARY REPORT

TABLES

4.1 Existing Screenline Volumes 1987 A.M. Peak Hour Person Trips

4.2 Increase in Screenline Crossings 1987-2001 A.M. Peak Hour

4.3 Facility Capacities

6.1 Recommended Road Network Improvements to 2001

6.2 Recommended Transit Network Improvements to 2001

6.3 Priority Road Network Improvements 1991-1996

6.4 Transit System Improvements 1991-1996

EXHIBITS

1.1 Regional Transportation Planning Process

2.1 Greater Vancouver's Municipalities

2.2 Increase in Population and Employment

4.1 Existing Road Network

4.2 Existing Regional Transit Network

4.3 Committed Transportation Network Improvements

4.4 Breakdown of Trips By Trip Purpose

4.5 Hourly Variation in Traffic Volumes

6.1 Recommended Road Network Improvements to 2001

6.2 Other Road Network Facilities

6.3 Recommended Transit Network Improvements to 2001

PREFACE

THE CRITICAL CHOICES

The remaining years of this century will not be easy for Greater Vancouver if we wish to continue to prosper while maintaining our superb quality of life. With continuing growth, our region is becoming more congested. Our daily lives are increasingly influenced by global economic, social and environmental trends. A whole new set of environmental problems will require major investments and fundamental changes in the way we live our daily lives. The public meetings held by the Task Force demonstrated that the region's residents are insisting that we make critical choices in ways that recognize our responsibility to the present and future generations.

In no area will these choices be more difficult than in transportation. Our street-based road system is beyond capacity in many areas, and the pattern of new development will produce additional demands which will impact all of us as transportation users, neighbourhood residents and taxpayers.

The Greater Vancouver Transportation Task Force recognized early in its work that this region's transportation problems cannot be resolved by simply building more facilities to feed our addiction to the inefficient use of the private automobile. Not only would these facilities compound the negative environmental, community and economic effects of our love affair with the car, they would soon be jammed with more traffic than they could handle. We can't afford to pay the price of this option in terms of dollars, livability, air quality or efficiency. On the other hand, a transit-only solution, although advocated by many, would be at least as expensive and fail to recognize that a good transit system is only possible with a good road system.

Although it is easy to become preoccupied with the daily travel requirements of the region's residents, we must also recognize and sustain the efficiency of the provincial, national and international road, rail, air and marine transportation services which are a cornerstone of Greater Vancouver's economy.

The Task Force has therefore opted for a balanced approach requiring concerted action on a number of fronts. Our approach is firmly based on the goals of the Livable Region Strategy and a proposed regional transportation strategy which fits within that Strategy. It includes careful investment in new facilities which can serve transit and goods movement needs as well as efficient use of the private automobile, but it also includes measures such as land-use policies to slow the growth in transportation demand by promoting employment closer to where people live. We recognize the need for incentives, disincentives and management strategies to get the most of our transportation infrastructure. Above all, we believe it is essential to establish an ongoing, single, simple, equitable and effective process for planning, financing and implementing transportation improvements in Greater Vancouver.

The report of the Task Force provides a basis for beginning to manage our transportation problems in relation to our overall goals, rather than letting our problems manage us. It is a framework for making the critical choices which will affect not only the mobility but the quality of life of the residents of Greater Vancouver for the next generation.

This report concludes Phase 1 of the Task Force's program. It establishes the basic principles and proposes an overall transportation strategy. It also responds to the requirement of the Minister of State for Mainland/Southwest for advice on the immediate priorities for provincial transportation investment in the region. The Phase 2 program, to begin in the fall of 1989, will build upon this framework by proposing longer-term strategies for road, rail, air and marine modes and identifying complementary shorter term initiatives for implementation by federal, provincial and municipal governments.

1.0 INTRODUCTION

1.1 Background to Study

In 1988 the Ministry of Transportation and Highways undertook a review of British Columbia's transportation system, covering not only the province's extensive highway network, but also transit, rail, marine including ports and ferries, and air. The product of this study was an 18 volume report entitled "A Transportation Planning Overview for the Province of British Columbia" covering the province both by region and by mode. One of the many recommendations of this study was that a comprehensive transportation study be undertaken for Greater Vancouver.

As the next step in its "Freedom to Move" initiative, the Province of British Columbia requested that each of the eight Economic Development Regions (EDR's) covering the entire province undertake more in-depth studies to:

(a) establish regional transportation strategies that will serve as the blueprint for future expansion of the existing transportation networks; and

(b) identify the priority transportation infrastructure projects that should be undertaken in the short term and that are consistent with the strategy for the longer term.

Although most of the member municipalities that make up the Greater Vancouver Regional District have their own formalized transportation plans or major road network plans that have been adopted by their councils, the last transportation plan covering the entire Greater Vancouver region was prepared in the 1950's, some 35 years ago. Since then, the region's population has more than doubled, and a tremendous physical expansion has taken place to accommodate this growth. The need for a new plan is therefore very apparent but so also is the magnitude of the work required to be done.

1.2 Formation of Task Force

In February 1989, the Honourable Elwood Veitch, Minister of State for the Lower Mainland/Southwest Region, established the Greater Vancouver Transportation Task Force. Through a consultative process with the Board of Directors of the Greater Vancouver Regional District and MLA's for the region, he appointed the following persons to serve as members:

- Michael O'Connor, Regional Manager, Greater Vancouver Regional District (Chairman)
- Ron Adams, Vice-President and General Manager, Con-Force Structures Limited
- Peter Armstrong, Executive Vice-President, Corporate

Development, Gray Line of Vancouver
- John Bremner, Director of Engineering Services, District of North Vancouver
- Robert Collier, Administrator, District of Delta
- George Colquhoun, Port Manager, North Fraser Harbour Commission
- Phil Clark, Assistant Port Manager, Corporate Development, Port of Vancouver
- Martin Crilly, Vice-President of Planning and Development, Johnston Terminals Ltd.
- Ted Droettboom, Assistant City Manager, City of Vancouver
- Doug Evans, President, Local 1-217, IWA Canada
- Mike Jones, Municipal Manager, District of Surrey
- Bruce McKeown, Assistant Deputy Minister, Ministry of Transportation and Highways
- John Mills, Vice-President, Planning and Scheduling, B. C. Transit
- Neil Nyberg, Municipal Engineer, District of Coquitlam
- Rick Pearce, Port Manager and Chief Executive Officer, Fraser River Harbour Commission
- John Ratel, Vice-President, B.C. Automobile Association
- Mel Shelley, Municipal Manager, District of Burnaby, replaced during the study by Tony Parr, Director of Planning and Building Inspection, District of Burnaby

The objective of the Task Force was established at the outset as:

> "To prepare an integrated transportation strategy for the Greater Vancouver Region which will encourage orderly economic development at the lowest possible cost to taxpayers and system users in a manner consistent with the maintenance of livability and environmental quality."

The study was divided into two phases with Phase I dealing with urban transportation issues:

- the preparation of a transportation strategy;
- the establishment of a 2001 transportation plan; and
- the setting of short term priorities.

Phase II on the other hand is to develop a longer term strategy, and deal with federal transportation investments.

Staffing and funding for this Phase I of the study were provided by the two Provincial Government agencies represented on the Task Force, namely, the Ministry of Transportation and Highways and B.C. Transit, and by the Greater Vancouver Regional District. A transportation consultant, Mr. Trevor Ward of the Ward Consulting Group, was appointed as the Study Director. Technical staff from member municipalities assisted in all aspects of the study throughout its duration.

In May 1989, the Task Force held seven public meetings throughout the region to explain the process and seek public comments on the region's transportation choices.

1.3 Timing

The Provincial Government desired that the study identify priorities for immediate investment in new transportation facilities in time to feed into the Ministry of Transportation and Highways' budgeting process for the 1990/91 fiscal year. The Task Force was therefore set the onerous task of completing its report with its recommendations and submitting it to the Minister of State by early July 1989. The various steps required in order to carry out this regional transportation planning process are shown as Exhibit 1.1.

This time frame meant that a full metropolitan area multi-modal transportation study, which normally would take 12 to 18 months to undertake, had to be completed in approximately three months. As a result of this requirement, some of the tasks originally scheduled to be undertaken in Phase I were rescheduled to Phase II of the study which is expected to commence in August or September, 1989. This Phase II will therefore address such issues as:

- developing strategic plans covering the air, rail and marine modes;
- investigating the relationship between, and the impacts of, alternative land use scenarios and transportation networks;
- determining the longer term transportation requirements to the year 2016 so that adequate rights-of-way can be preserved now while the required land is still undeveloped and therefore available;
- establishing a region wide road network that provides continuity between adjacent municipalities for all freeways, expressways, arterial roads, and collector roads.

It is anticipated that this study is but the beginning of what will become an ongoing transportation planning process that will enable all three levels of government to work together cooperatively to continually plan and implement priority improvements to Greater Vancouver's transportation system.

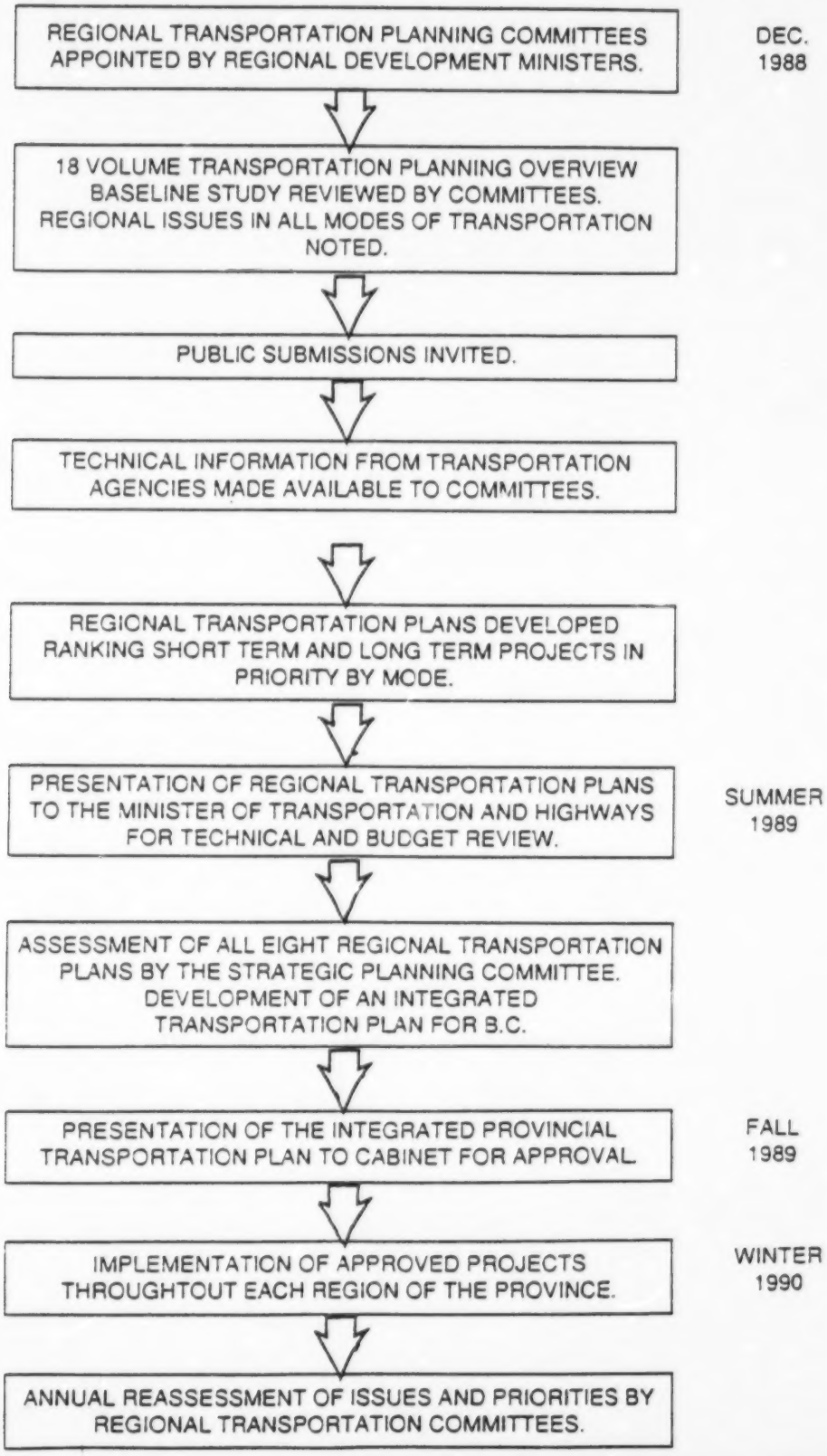
2.0 ESTABLISHING THE FRAMEWORK

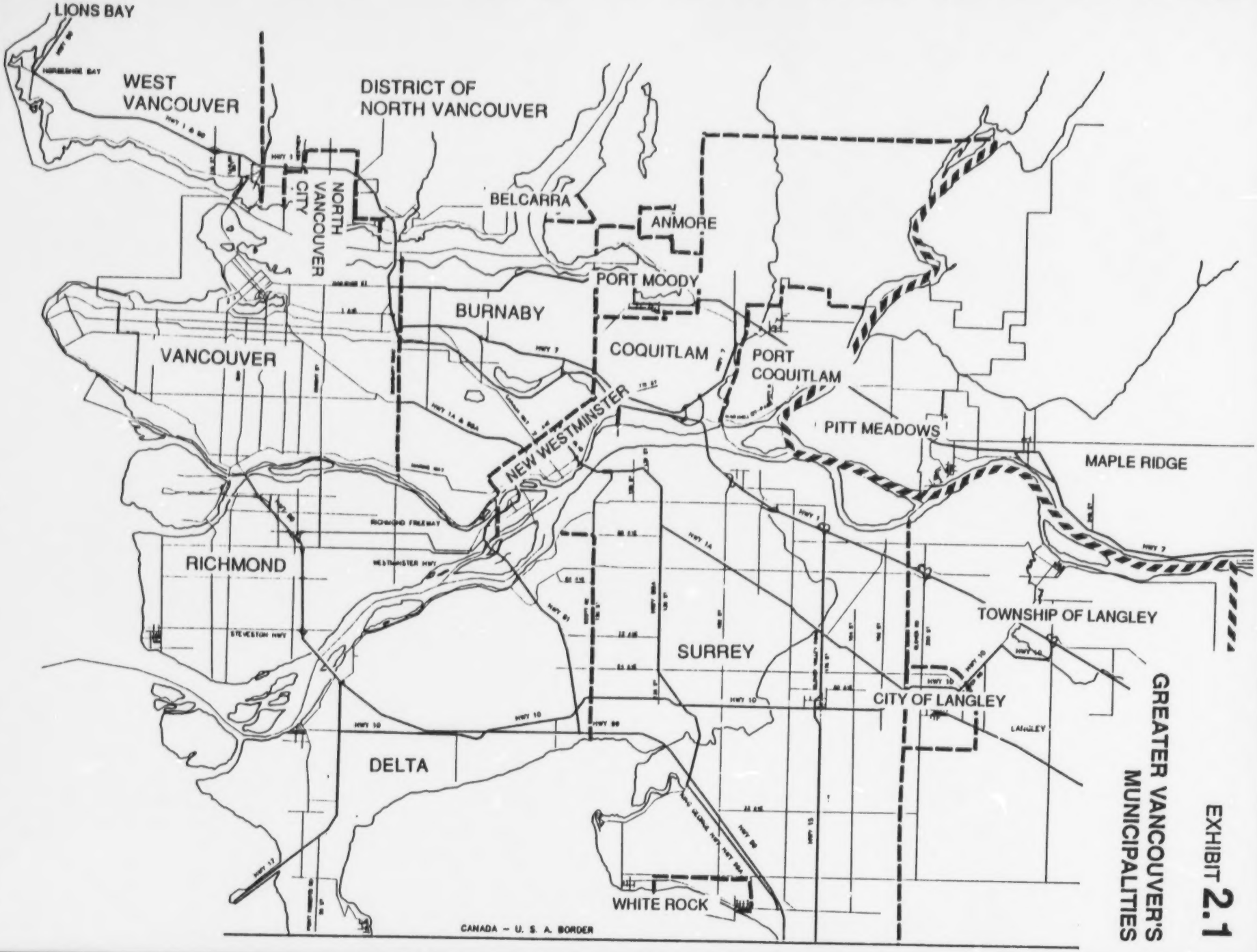
2.1 Overview of Greater Vancouver

Greater Vancouver is comprised of some 18 municipalities and three electoral areas extending from West Vancouver in the west to the Township of Langley in the east and from Lions Bay in the north to Delta, Surrey and White Rock in the south. The location of each of these municipalities is shown in Exhibit 2.1.

EXHIBIT **1.1**

REGIONAL TRANSPORTATION PLANNING PROCESS


REGIONAL TRANSPORTATION PLANNING COMMITTEES APPOINTED BY REGIONAL DEVELOPMENT MINISTERS.
DEC. 1988
18 VOLUME TRANSPORTATION PLANNING OVERVIEW BASELINE STUDY REVIEWED BY COMMITTEES. REGIONAL ISSUES IN ALL MODES OF TRANSPORTATION NOTED.
PUBLIC SUBMISSIONS INVITED.
TECHNICAL INFORMATION FROM TRANSPORTATION AGENCIES MADE AVAILABLE TO COMMITTEES.
REGIONAL TRANSPORTATION PLANS DEVELOPED RANKING SHORT TERM AND LONG TERM PROJECTS IN PRIORITY BY MODE.
PRESENTATION OF REGIONAL TRANSPORTATION PLANS TO THE MINISTER OF TRANSPORTATION AND HIGHWAYS FOR TECHNICAL AND BUDGET REVIEW.
SUMMER 1989
ASSESSMENT OF ALL EIGHT REGIONAL TRANSPORTATION PLANS BY THE STRATEGIC PLANNING COMMITTEE. DEVELOPMENT OF AN INTEGRATED TRANSPORTATION PLAN FOR B.C.
PRESENTATION OF THE INTEGRATED PROVINCIAL TRANSPORTATION PLAN TO CABINET FOR APPROVAL
FALL 1989
IMPLEMENTATION OF APPROVED PROJECTS THROUGHTOUT EACH REGION OF THE PROVINCE.
WINTER 1990
ANNUAL REASSESSMENT OF ISSUES AND PRIORITIES BY REGIONAL TRANSPORTATION COMMITTEES.



GREATER VANCOUVER'S MUNICIPALITIES

EXHIBIT 2.1

With a 1986 population of 1,336,000 persons, this region represented approximately 46% of the Province's total population of 2,883,000. While all G.V.R.D. municipalities continue to experience growth in population, these increases are more significant in the suburban municipalities with ample available land to be developed, i.e., Coquitlam, Port Coquitlam, Delta, Surrey, and Langley.

The service industry, trade and manufacturing are the principal employment sectors of the region. Because of its natural port, the area is a focal point for goods moving between the Pacific Rim countries and both British Columbia and the rest of Canada.

Growth in terms of new development projects is currently taking place at record rates. Major projects currently underway in the region include film/tv studios, high rise office towers, chemical plant expansions, large waterfront residential developments, industrial parks, shopping centres and hotels.

2.2 Regional Development Goals and Strategy

In the early 1970's Greater Vancouver's municipalities prepared the Livable Region Plan as a vision for the development of the region into the future. Since its adoption, this plan has helped to shape the regional agenda and focus intermunicipal and intergovernmental action. It has provided a framework for developing rapid transit, building regional town centres, and improving environmental quality.

As part of a recent update of this earlier plan, a statement of goals for Greater Vancouver was prepared, together with a supporting strategy. The resultant document has been submitted to all municipalities for their review and endorsement. The transportation strategy and the resultant future transportation plan for the region must support these goals and the accompanying strategy. They are therefore briefly presented at this point.

(a) Goals for Greater Vancouver

Greater Vancouver's livability is one of the region's most valued features. The high quality of life gives the region much of its unique identity. It is a source of pleasure and pride to those who live here and it attracts new residents.

Livability has many facets. For the Livable Region Strategy, it is expressed as seven broad regional development goals. These are qualities to be maintained or enhanced as Greater Vancouver grows and changes. They are qualities to strive for, and measures against which to evaluate policies or initiatives affecting regional development, including the expansion of our existing transportation system. These livability goals are as follows:

- A region in nature.
- An economy of growth and change.

- o Accessibility for people and goods.
- o A healthy and safe region.
- o A region of diversity and vitality.
- o An equitable region.
- o An efficient region.

(b) Strategy for the Livable Region

The Livable Region Strategy has five interrelated and reinforcing elements. While each makes sense on its own, they will have greater impact on maintaining and enhancing Greater Vancouver's livability if acted on together. These elements are:

- o Environment: Protect Greater Vancouver's natural environmental quality through the conservation of natural amenities, the maintenance of air and water quality.

- o Accessibility: Improve accessibility for people and goods through achieving a jobs to labour force balance in all parts of Greater Vancouver, fully utilizing the existing transportation system, and developing a cost-effective and balanced set of improvements to transit facilities and roads.

- o Regional Economy: Help provide the setting, infrastructure and services necessary to develop a growing and changing regional economy.

- o Centres: Continue to develop downtown Vancouver and the town centres as major concentrations of higher density residential and commercial development and as hubs for the transit system, and support the development of smaller centres as local foci for community services and transit.

- o Community Life: Improve Greater Vancouver's community life through providing for social well-being.

Although only one of these elements deals specifically with transportation, viz., accessibility, any expansion to the existing transportation system will have an impact on each of the other elements as well.

2.3 Regional Transportation Strategy for the 1990's

As the region develops into the 1990's, it is necessary to have, not only a broad strategy to guide the overall development of the region as a whole, but also a transportation strategy that flows out of the overall strategy and puts into practice the transportation aspects of the strategy. It will dictate the form of the region's transportation network which will provide the required mobility and accessibility. The transportation strategy developed as part of the study also has five elements. They are as follows:

- Maximum Utilization of Existing Infrastructure: Make the best use of the existing investment in transportation infrastructure, both roads and transit, that is already in place:
  e.g. left turn lanes at intersections, parking prohibitions in peak periods, and increased car occupancy.

- Increased Use of Transit: Support improvements to the public transit system and programs to encourage its increased use as a means to respond to, and influence, the travel and mobility needs of the Region.
  e.g. New rapid transit lines, improved bus frequencies, more convenient routes.

- Multiple Needs for Road Network: In improving the capacity of our roadway system, give appropriate weight to the following factors:
  . use by transit of the improved road
  . use for goods movement
  . continuity
  . safety
  . efficient use of private automobiles
  . community

- Managing Demand: Place an increased focus on the management of the travel demands on the transportation systems:
  e.g. high occupancy vehicle lanes, higher gasoline taxes, increased parking charges.

- Coordinated Planning: Pursue funding, policy, and institutional arrangements that support coordinated planning, development and improvement of the region's transportation systems.

The above strategy elements were then used in comparing alternative network options and establishing the form of the recommended 2001 plan as well as the relative timing of the components included in the 1992-1996 improvement program.

2.4 Population Forecasts

The G.V.R.D.'s regional transportation model required estimates of future growth and distribution of population and employment within the region in 1991 and 2001 as a basis for estimating future travel demand and the impact of alternative transportation system improvements. The population and households forecasts for these two horizon years were prepared by G.V.R.D. staff in consultation with municipal staff.

In an earlier study, it was forecast that the strong growth in Greater Vancouver's present population of about 1,400,000 will continue during the 1990's as the result of natural increase and migration to the region from other parts of Canada and other countries. The regional population is expected to reach approximately 1,725,000 by the year 2001.

Although all parts of Greater Vancouver will experience population growth during the next 12 years, more than 60% of the growth will occur in the suburbs in the eastern part of the region, particularly the municipalities south of the Fraser River. Growth in the Burrard Peninsula municipalities will represent approximately 20% of the regional population increase.

The increase in population by subregion is given in Exhibit 2.2(a).

2.5 Employment Forecasts

Greater Vancouver's employed labour force is forecast to increase from 665,000 in 1986 to approximately 935,000 in 2001. Service sector employment is estimated to represent nearly 80% of the growth. While job growth will increasingly be dispersed throughout the region, downtown Vancouver will remain as the major concentration of employment and it is estimated that nearly 40% of regional job growth will be located on the Burrard Peninsula.

The employment forecasts in terms of both the actual increases and the distribution increases for each subregion are given in Exhibit 2.2(b).

2.6 Alternative Land Use Scenarios

The distribution of forecast 2001 population and employment projections as outlined above were based both on the municipalities' expectations of growth. These projections reflect the municipalities' recent experience and the anticipated effects of their growth and development policies. These policies in turn reflect the intent of the Livable Region Strategy which proposes that the future growth be oriented towards regional town centres.

In order to determine the impact that different development patterns would have on the recommended transportation network, particularly if the Livable Region Plan was emphasized more strongly, two alternative land use scenarios were established. These alternative scenarios are as follows:

(a) Focused Growth:

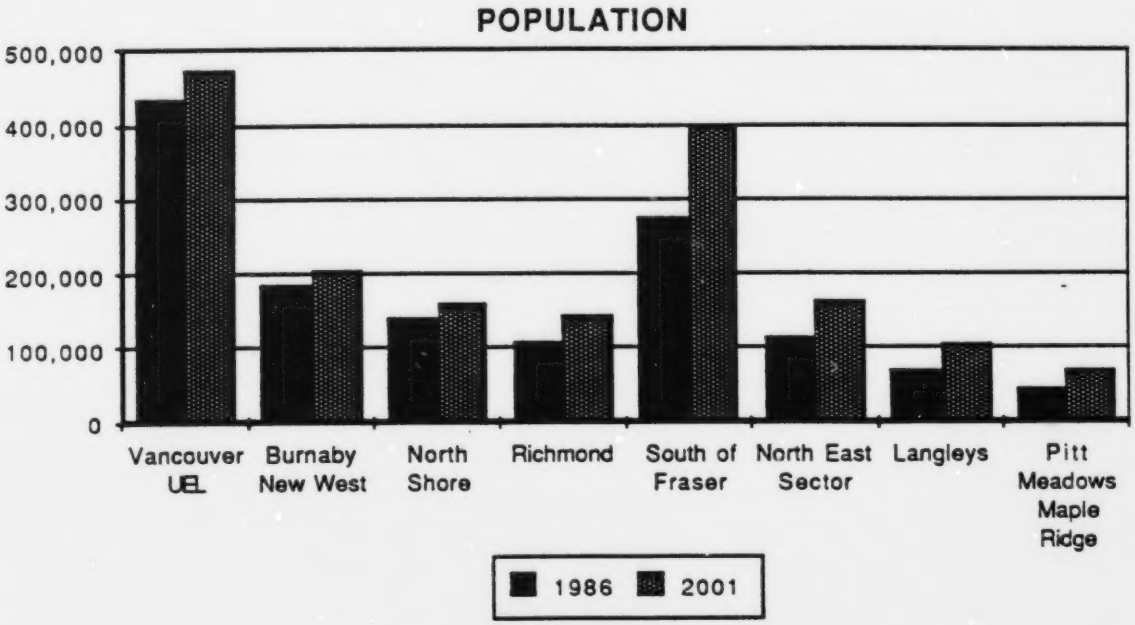
This alternative increases the proportion of growth in the 1986 to 2001 period that is concentrated in major centres and transit corridors. It modifies the trend or "base case" scenario by concentrating an increased portion of the population and employment growth allocated to each sector along potential high capacity transit lines, and in downtown Vancouver and the regional town centres.

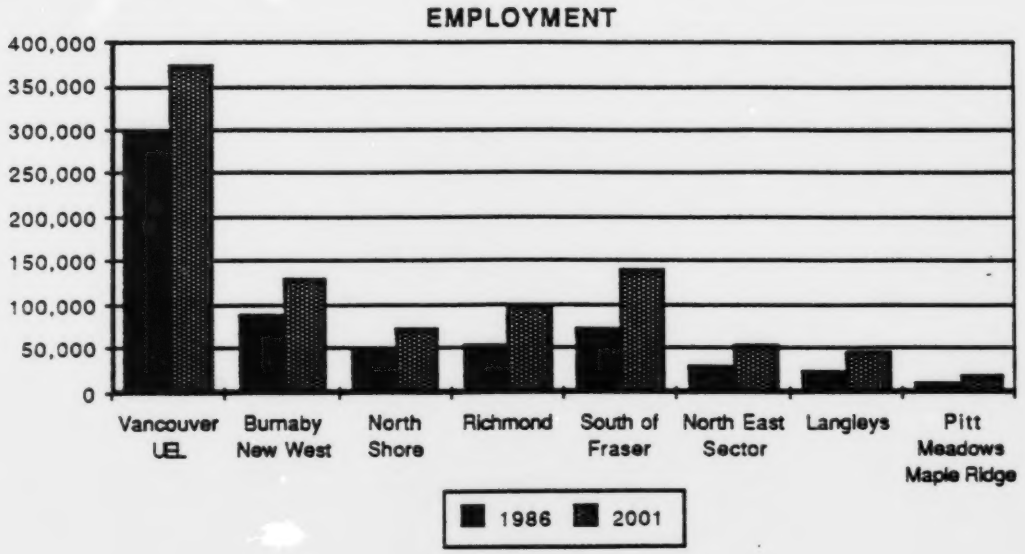
(b) Balanced and Concentrated Labour Force and Employment:

This alternative modifies the trend scenario by shifting a portion of employment growth currently forecast for central Vancouver to the outer suburbs (South of the Fraser River, Langley, North East Sector, Pitt Meadows/Maple Ridge), no changes to the trend employment projections

EXHIBIT **2.2**

INCREASE IN POPULATION AND EMPLOYMENT





were made for the City of Vancouver outside of the central area, Richmond, Burnaby, New Westminster, and the North Shore. It also forecasts a portion of the population growth in the outer suburbs will instead occur in the Burrard Peninsula municipalities (Vancouver, Burnaby, New Westminster). Within each sector, the concentration of population and employment growth is increased along the potential high-capacity transit lines and in the regional town centres and downtown Vancouver.

3.0 GOODS MOVEMENT

3.1 Goods Movement Working Group

The movement of goods around Greater Vancouver is not only an important element of the region's economy, but also has a big impact on the overall transportation system. In order to address the issue of good movement, the Task Force established a Goods Movement Working Group. This group interviewed representatives from the goods movement industry covering trucking firms, the railways, distributors, port terminals, shipping groups and the airport in order to identify the trends, current and future issues, infrastructure deficiencies, etc.

3.2 Trends in Goods Movement

The main groups of goods moving in the Greater Vancouver are: consumer and manufactured items moving within the region for local use, bulk commodity exports (such as coal, grain, potash, sulphur and forest products) moving through the region for export; and containerized cargo, both export and import.

(a) Trends in Goods Movement Traffic Levels

The significant trends in the movement of these goods are as follows:

- o overall growth in bulk commodity exports means heavy rail traffic must continue to have access throughout the region;
- o new storage facilities, cargo staging areas and rail tracks will be needed near tidewater and truck traffic to and from existing port terminals will increase; and
- o new intermodal transfer facilities to shift containers between truck and rail will be needed, likely south of the Fraser River, by the year 2000 or sooner.

(b) Trends in Routing and Direction

Warehouses and freight terminals are moving away from downtown Vancouver to Burnaby, Surrey and Coquitlam. In addition, CN Rail is replacing its Main Street intermodal yard with a new yard in Surrey. In the future many big freeway

rigs will terminate/originate their trips further from the central business district and proportionately fewer will need to penetrate close to the core.

(c) Trends in Choice of Mode

The economic range of trucking relative to rail is increasing. Already some commodities heretofore carried by rail, such as steel and petroleum products are moving into and out of B.C. by long-haul truck. If the expected changes are made to the Western Train Transportation Act, there is the potential for grain from the Prairies to move directly to Vancouver terminals by truck.

(d) Trends in Handling Methods and Vehicles

The general trends in this area are:

- o bigger, specialized railcars, trucks and containers
- o bigger ships
- o growth in roll-on/roll off shipping
- o growth in coastal marine traffic and barging

(e)Trends in Public Policy

As the proposed Goods and Services Tax (GST) is to be applied to the transport of goods, the cost of transport and distribution and the penalty for congestion and delay as seen by the customers will rise accordingly. Deregulation in the transport industry has led to fierce competition. This brings a need to enforce safety and environmental standards more vigorously.

3.3 Obstacles to More Effective Goods Movement

(a) Road Congestion

Congestion on roads within the region is stated by truckers to be a severe problem. As congestion increases, the cost of transport increases and service decreases. This in turn means more trucks are required to carry the same amount of goods.

(b) Confined Burrard Port Area

The encroachment of real estate development on to the already inadequate land available on Vancouver's Burrard Inlet waterfront may lead to even worse congestion and delays to trucks serving the waterfront.

(c) Critical Rail Bridge

The New Westminster Railway Bridge over the Fraser River is shared by several railways. The bridge is considered to be an old structure with tight rail curvatures on the approaches, is vulnerable to ship collisions, and is a bottleneck to trains.

(d) Lack of An Established Planning Focus

While the builders of urban transport infrastruccture have concentrated on the movement of people, goods have usually fitted in where they can. Truck infact account for 15% to 18% of mid-day traffic. For passenger transit, there is a considerable body of expertise and there exists a single organization with executive authority. For goods movement there is very little data, only a minor fund of knowledge and no single group in charge.

4.0 CURRENT AND FUTURE TRANSPORTATION DEMAND

4.1 Existing Road Network

The existing road network in Greater Vancouver, in terms of Provincial Highways and key arterials, is illustrated in Exhibit 4.1. These roads have been divided into three classifications:

- Freeways - multi-lane, divided highways with all intersections grade separated and no direct access from or to the highway from adjacent property.
- Expressways - divided highways with a limited number of at-grade controlled intersections and no direct access from or to adjacent property.
- Arterials - major roads, divided or undivided, with limited direct access to adjacent property, typically connecting major activity centres.

Greater Vancouver is punctuated by many water bodies which include Burrard Inlet, False Creek, the Pitt River and the Fraser River regions with its South, Middle, and North arms. Because of its topography, the region's transportation system is very much dependent upon the bridges that cross these water bodies. The existing bridges are as follows:

- Lions Gate
- Second Narrows
- Queensborough
- Knight St.
- Oak St.
- Arthur Laing
- Dinsmore
- Sea Island
- Pitt River
- Port Mann
- Skybridge
- Alex Fraser
- George Massey Tunnel
- Cambie St.
- Granville St.
- Pattullo
- Burrard St.

EXHIBIT **4.1**

EXISTING REGIONAL ROAD NETWORK

All roads not under the jurisdiction of the Ministry of Transportation and Highways are the responsibility of the individual municipalities. This responsibility covers planning, construction and maintenance of such facilities. There is no one jurisdiction responsible for the overall planning of the road network in the entire region, and municipal networks are sometimes discontinuous at municipal boundaries, either in terms of their existence, classification or standard.

As this current study sought to establish a transportation strategy and to identify the physical improvements required to the existing transportation network in order to accommodate the projected future regional travel volumes, no attempt was made to establish a region wide road classification network. However, as has already been noted, it is anticipated that Phase II of this study will indeed address this issue and thereby begin to guide the coordination of the overall planning of the region's road network.

4.2 Existing Transit Network

The existing transit network in Greater Vancouver is made up of two components. They are as follows:

(a) Conventional Transit:

The Vancouver Regional Transit System utilizes 562 diesel buses, 244 electric trolley buses, 114 rail cars and 2 passenger ferries, a unique multi-modal system. Fares and schedules are totally integrated allowing for easy transfer from one mode to another. The system now covers an area of 1,500 sq. kms, the largest in Canada. Conventional services are comprised of four main elements:

- Urban Grid Network: Local bus services in the City of Vancouver generally operate at high frequencies on a grid system of routes to permit convenient transfers at intersections of grid routes.

- Suburban Focal Point Network: Local and regional express buses are timed to arrive simultaneously at transit exchanges so that "no wait" bus-to-bus transfers can be made. A limited number of these focal points have Park and Ride lots for use by commuters.

- SkyTrain: since 1986, the Sky Train system has acted as a high capacity "spine" providing rapid transit service which connects downtown Vancouver to the major town centres at Metrotown and New Westminster. Many urban and suburban bus routes have been restructured to "feed" stations along the SkyTrain line.

- SeaBus: The twin SeaBus ferries provide a high capacity extension of the rapid transit system across Burrard Inlet. In North Vancouver many local bus services are designed to feed the SeaBus terminal at Lonsdale Quay.

(b) Custom Transit:

The regional handyDART fleet of 110 vehicles includes 83 lifts to

accommodate persons in wheelchairs and 27 other vans and station wagons for ambulatory disabled individuals.

The regional services outlined briefly above are illustratedin Exhibit 4.2.

4.3 Committed Transportation Network Improvements

A number of improvements to the road and transit networks have already been committed for construction by the end of 1991 by either the Ministry of Transportation, B.C. Transit, or individual municipalities. These improvements which are listed below and illustrated in Exhibit 4.3 were therefore assumed to be in place in the analysis and not considered as candidate projects.

The Minister responsible for B.C. Transit has previously announced the Provincial Government's policy to extend the SkyTrain from Scott Road to Whalley. The Task Force therefore accepted that this project was also committed. This issue however emphasizes the need to have proper consultation between the different levels of government on such projects and the need to have an equitable funding formula in place for all transportation facilities regardless of mode.

Furthermore, during the Task Force's study, Provincial funding for a new bridge across the Fraser River Middle Arm at No. 2 Road was announced. This project was therefore also added to the list of committed projects. The Task Force expresses a concern that such a facility was in fact announced during the current study since initially this project was one of those being analyzed.

The committeed projects are as follows:

- Alex Fraser Bridge (Highway 91) widening to 6 lanes
- Braemar-Dempsey Connector (North Vancouver)
- Broadway widening to four lanes between North Road and Gaglardi Way (Burnaby)
- Cassiar Connector (Highway 1)
- George Massey Tunnel bus priority access to tunnel portal
- Highway 17 Causeway widening (Delta)
- Highway 91/Highway 91A interchange grade separation
- Lonsdale/Highway 1 and Westview/Highway 1 interchanges
- Mariner Way/Johnston Street overpass (Coquitlam)
- Marine Way - 10th Avenue Connection (Burnaby)
- Mary Hill By-Pass widening to four lanes from Lougheed (Coquitlam)
- Nordel Way extension to 116th Street (Delta)
- Richmond Expressway completion between Highway 91 and 99
- Royal Avenue widening to four lanes between Columbia St. and Eighth Street (New Westminster)
- Scott Road widening to four lanes between Yale and Grace and between 80th Avenue and Highway 10 (Surrey/Delta)
- Sea to Sky Highway
- Shell Road extension from Alderbridge Way to Westminster Highway. (Richmond)
- SkyTrain extension across the Fraser River to Scott Road and on to Whalley
- No. 2 Road Bridge across the Fraser River Middle Arm (Richmond)
- 200th Street widening to four lanes Highway 10 to Highway 1 (Langley)

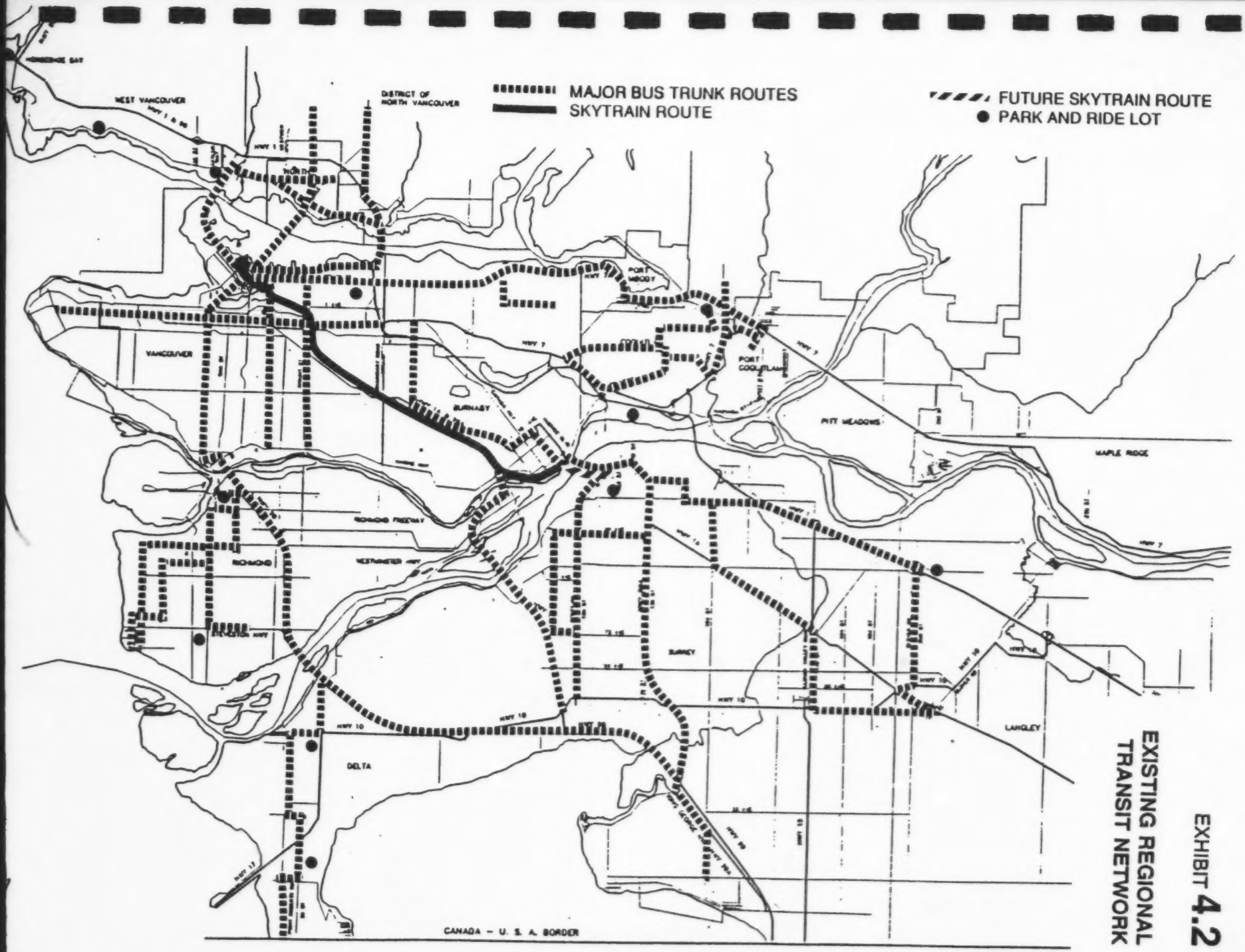


EXHIBIT 4.2

EXISTING REGIONAL TRANSIT NETWORK

EXHIBIT **4.3**

COMMITTED TRANSPORTATION NETWORK IMPROVEMENTS

4.4 Existing Travel Characteristics

There are many means of measuring or presenting travel characteristics in a regional network. These include:

- o daily (24 hour) traffic volumes;
- o level of service by intersection or road segments;
- o composition of trips by trip purpose;
- o origin/destination patterns;
- o screenline crossings; and
- o corridor travel patterns.

Details on each of these characteristics are provided in Volume II - "Main Report" and Volume IV - "Technical Report". For the purpose of this "Summary Report", only the breakdown of trips by trip purpose, and a summary of the screenline crossings in the a.m. peak period are presented. This information is given in Exhibit 4.4 and Table 4.1 respectively.

TABLE 4.1

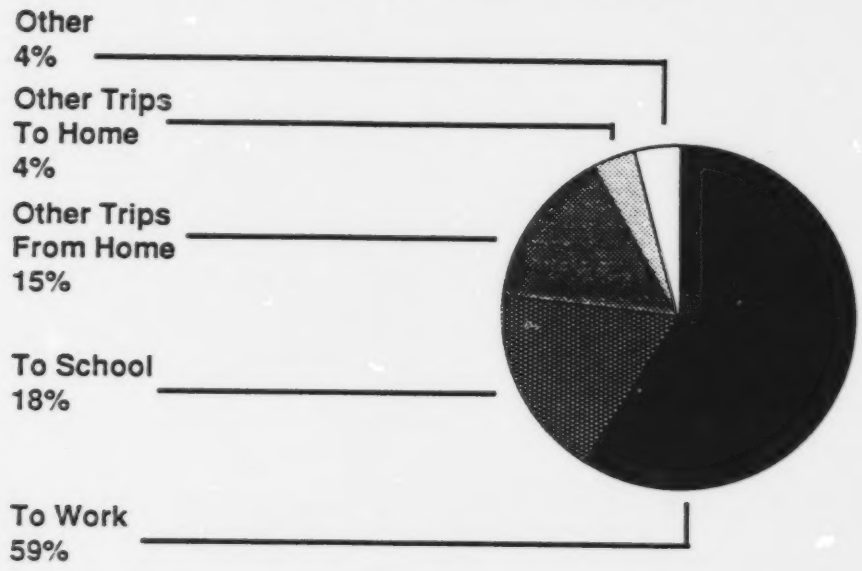
EXISTING SCREENLINE VOLUMES
1987 A.M. PEAK HOUR PERSON TRIPS

SCREENLINE	NORTHBOUND	SOUTHBOUND
Burrard Inlet		
Roads	6,200	11,600
Transit	600	3,100
Combined	6,800	14,700
Fraser River North Arm		
Roads	16,900	10,700
Transit	2,600	400
Combined	18,500	11,100
Fraser River South Arm		
Roads	11,800	4,100
Transit	1,600	100
Combined	13,400	4,200
Fraser River Main Arm		
Roads	11,800	7,100
Transit	900	100
Combined	12,700	7,200

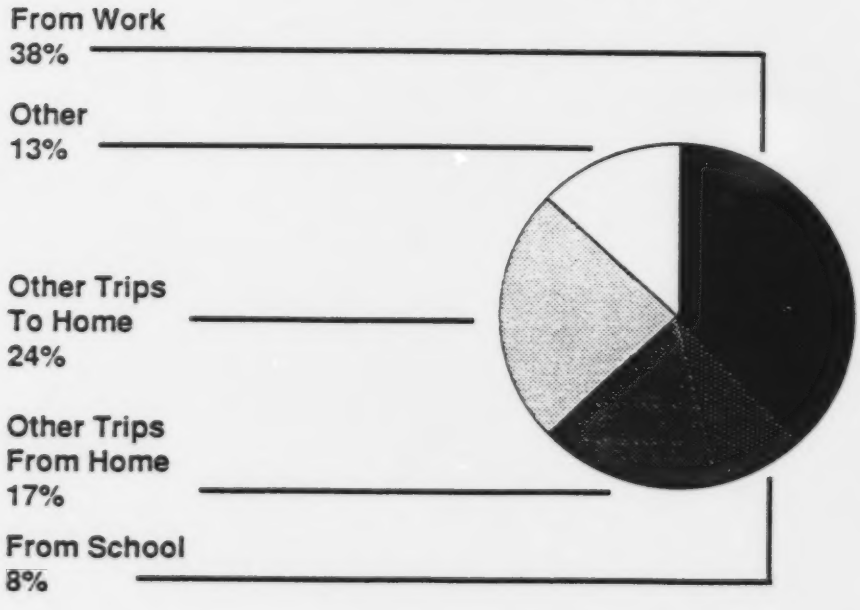
EXHIBIT **4.4**

BREAKDOWN OF TRIPS BY TRIP PURPOSE

AM PEAK PERIOD



PM PEAK PERIOD



Traffic volumes on any particular road or transit service vary considerably during a 24-hour day. The variation in traffic volumes on the Port Mann Bridge and in particular the relationship of the peak hour volumes to the average for the day is illustrated in Exhibit 4.5. Ridership on regional bus routes and the SkyTrain show a similar pattern.

The magnitude of peak period travel demand on the transportation network, compared to the total daily demand can be summed up as follows:

18% of daily travel occurs in 7-9 a.m. peak
11% of daily travel occurs in 11:30-1:30 midday
20% of daily travel occurs in 4-6 p.m. peak

49% of daily travel occurs in 6 hours of day.

It is therefore apparent that it is the travel demand in the a.m. and p.m. peak periods that establishes the capacity requirements. Exhibit 4.5 shows that a high percentage of the trips in the a.m. peak period are home-to-work and home-to-school trips. Since the magnitude and distribution of these trips are very closely related to the distribution of population and employment, the a.m. peak hours were selected as the basis for forecasting future travel demands and therefore the transportation network's capacity requirements.

4.5 Future Traffic Patterns

The 1991 and 2001 "base case" land use projections established in conjunction with this study were input into the G.V.R.D.'s regional transportation model. This model then projected the number of trips that would be made on the road and transit network at these future time horizons based on the magnitude and distribution of the population and employment levels given in the trend scenario. In the initial analysis, it was assumed that people would have the same opportunities to travel as they have at the present time, i.e. that the congestion level would be the same as today and that overall, people would drive or ride the same distance and for the same length of time as today.

The results of this analysis in terms on the increases in person trips across the same screenlines used earlier are given in Table 4.2. These projections, of course, also assume that there would be sufficient additional capacity in the transportation network to accommodate the increase in trips, and that the existing level of service is maintained.

EXHIBIT **4.5**

HOURLY VARIATION IN TRAFFIC VOLUMES

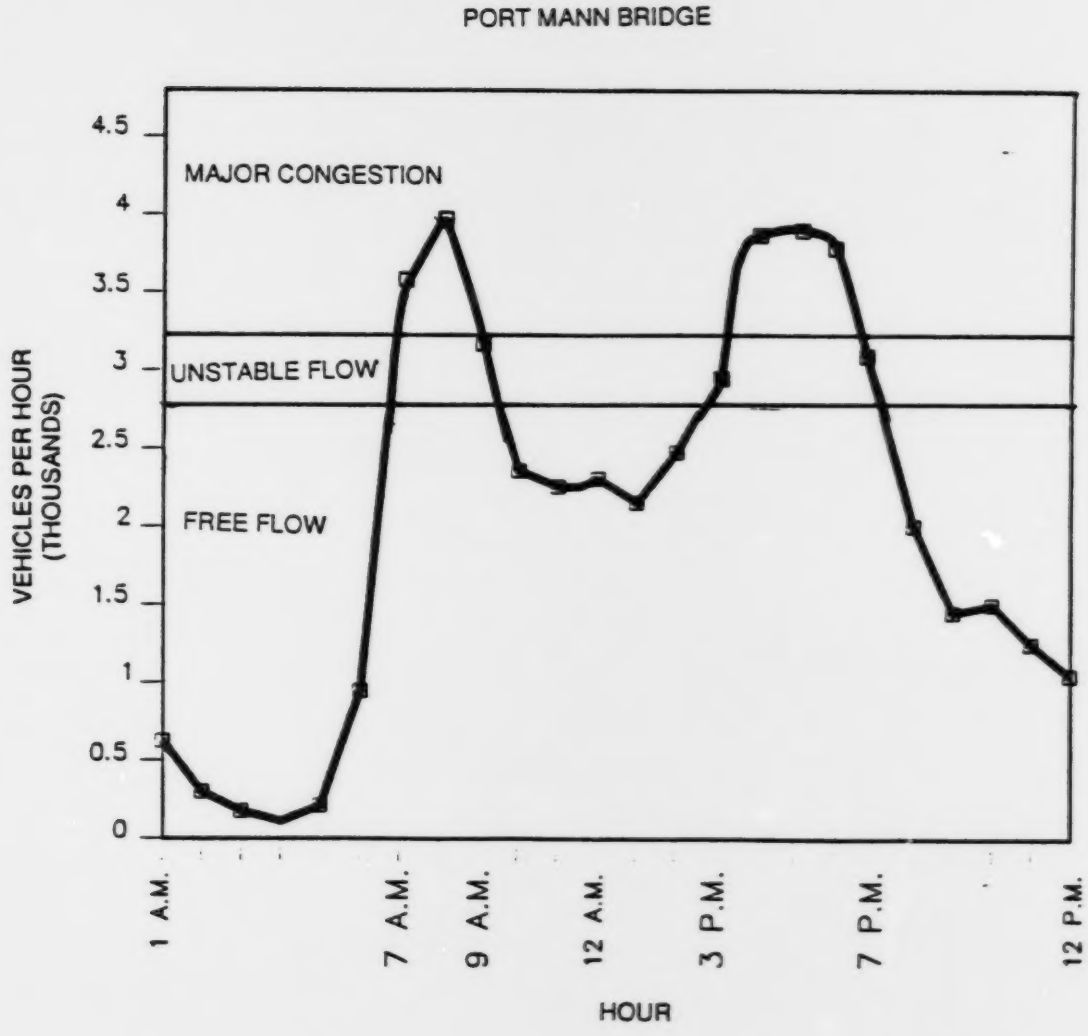


TABLE 4.2

INCREASE IN SCREENLINE CROSSINGS
1987 - 2001 A.M. PEAK HOUR PERSON TRIPS

SCREENLINE	NORTHBOUND	SOUTHBOUND
Burrard Inlet		
Roads	4,200	3,300
Transit	400	300
Combined	4,600	3,600
Fraser River North Arm		
Roads	4,800	3,700
Transit	1,100	500
Combined	5,900	4,200
Fraser River South Arm		
Roads	5,400	0
Transit	800	0
Combined	6,200	0
Fraser River Main Arm		
Roads	5,300	1,500
Transit	3,000	200
Combined	8,300	1,700

If it is assumed that the increases given in Table 4.2 are to be accommodated in terms of additional capacity on the road and transit networks, then it is apparent many new facilities must be built or existing ones upgraded. In order to provide an indication of how many facilities could be required to meet this projected increase in demand, the practical capacities of various types of road and transit facilities are given in Table 4.3

TABLE 4.3

FACILITY CAPACITIES

ROADWAY	EXAMPLE	CAPACITY IN PERSONS PER LANE PER HOUR
Undivided Arterial	Kingsway	1100
Divided Arterial	King George Hwy.	1300
Expressway	Lougheed Hwy.	1600
Freeway	Highway 1	2400

TRANSIT	CAPACITY PER DIRECTION PER HOUR
Bus Route at 10 buses per hour	600 Persons
SkyTrain Route	15,000-25,000 Persons

The Transportation Strategy elements indicate however that there are a number of issues that must be addressed in determining how this increase is to be accommodated. For example, an increase in auto travel demand across the Burrard Inlet might be accommodated by a third crossing without the guidelines of the strategy, but with the strategy, consideration must be given to encouraging greater use of transit through improved transit service, widening either of the existing bridges, and increasing parking fees in downtown Vancouver to discourage travel to the downtown.

5.0 NETWORK ALTERNATIVES

5.1 Identifying Candidate Projects

In carrying out this study, it was essential that all possible new, upgraded or extended transportation projects be considered as eligible candidates. A comprehensive list of potential projects were therefore derived from the following sources:

- Municipalities: in response to a request from the Task Force, they identified their intended or committed improvements over the next five year period together with desired improvements which they would like to see examined:
  - e.g. Port Moody Bypass
    North Perimeter Road (Surrey);
- Province of B.C.: known proposals being considered as possible future network improvements by B.C. Transit and the Ministry of Transportation and Highways:
  - e.g. Richmond Light Rapid Transit
    Third tube in the George Massey Tunnel;
- Proposals from Citizens: including businesses and various organizations via written submissions or verbal representation at the public meetings;
  - e.g. Improved bus frequencies or routes
- Previous Reports: proposals identified in previous reports and studies:
  - e.g. Commuter rail between Vancouver and Port Coquitlam; and
- Provincial Transportation Overview Study: proposals included in this 1988 Study report:
  - e.g. New Boundary Road freeway connecting the Richmond Expressway to Highway 1.

From these sources, more than 500 potential road and transit projects were identified. This extensive list was then condensed to approximately 90 projects that were considered to have potential regional significance in terms of improving circulation, mobility and accessibility around Greater Vancouver. Some projects that addressed the needs for improvements to the goods movement system were also included.

5.2 Candidate North Shore Sector Projects

The North Shore has experienced a steady growth in both population and traffic volumes in the past and will continue to do so in the future. The main transportation issues of concern to this sector, both present and future, are:

- o increasing congestion and very lengthy delays at the Lions Gate and Second Narrows bridgeheads in the a.m. peak hour;
- o the lack of grade-separated interchanges on the Trans Canada Highway at Lonsdale Avenue and Westview Ave;
- o congestion on Highway 1 in the vicinity of the Horseshoe Bay ferry terminal;
- o congestion on Marine Drive;
- o lack of high frequency transit service (i.e. less than 10 minute headways) between the North Shore and Downtown Vancouver; and
- o projected growth in development in, and therefore travel demand to and from, the Seymour area east of Second Narrows Bridge.

The projects to be evaluated as possible answers to the above problems were as follows:

- . Widen Second Narrows Bridge and Highway 1.
- . New third crossing of Burrard Inlet (tunnel).
- . Widen Lions Gate Bridge to five lanes.
- . New direct link between Lions Gate Bridge and Highway 1.
- . Complete the Low Level Road between Main St. and Marine Dr.
- . Extend the SkyTrain across Burrard Inlet to Lonsdale Quay.
- . Increase the level of SeaBus and feeder bus service.
- . Widen Marine Drive at Lions Gate Bridge.

5.3 Candidate Burrard Peninsula Sector Projects

This sector includes Richmond, Vancouver, Burnaby, and New Westminster. Because of the ever increasing growth in employment opportunities in Vancouver and to a lesser extent Burnaby, there is a heavy movement of traffic through this sector and into Vancouver's C.B.D. from the outlying municipalities. The main transportation concerns are:

- o increasing congestion and delays in the a.m. peak hour at the three bridges leading from Richmond to Vancouver, via, Oak Street, Knight Street and Dinsmore;
- o heavy volumes and congestion in the Highway 1 corridor between the Port Mann Bridge and Cassiar Street;
- o heavy volumes on all east-west arterials in Burnaby and Vancouver;
- o the lack of a direct truck route from Highway 1 to Vancouver's waterfront;
- o congestion and lack of parking in Vancouver's CBD;
- o lack of a direct connection between Highway 1 and the Pattullo Bridge and between Highway 99 and Highway 1;
- o high volume of truck traffic on a restricted Front Street in New Westminster; and
- o need to increase the capacity of transit services into Vancouver's CBD and improve the level of service throughout the sector.

The projects evaluated as prospects to be included in the 2001 plan for this sector were:

- . Widen Highway 1 between Brunette and Cassiar
- . Stormont/McBride Connector (Burnaby);
- . New Grandview Cut roadway (Vancouver);
- . New Boundary Road Freeway from the Richmond Expressway to Highway 1;
- . New Boundary Road Bridge and arterial road from the Richmond Expressway to Marine Way;
- . Upgrade existing link between the Lions Gate Bridge and the Burrard Street and Granville Street Bridges;

- Widen Lougheed Highway between Brunette and Boundary Road;
- New Gaglardi - Hastings Connector (Burnaby);
- Upgrade Hastings Street (Burnaby);
- Widen Front Street and Columbia Street (New Westminster);
- Widen Arthur Laing Bridge and grade separate the Russ Baker/ Arthur Laing/Miller Road intersection;
- Widen Oak Street Bridge;
- Widen Knight Street Bridge;
- New Cambie Street Bridge linking to Highway 99;
- Grade separation of the Highway 91/Boyd Street and Highway 91A/Hamilton Street intersections;
- Upgrade Queensborough Bridge/Marine Way/Stewardson Avenue/20th Street interchange (New Westminster);
- Rapid transit service between Vancouver and Richmond;
- Extend SkyTrain along Hastings Street to the P.N.E.
- Bus only lanes on Hastings Street, Lougheed Highway, Broadway, Barnet Highway, Granville Street, and Oak Street; and
- Skytrain extension to Lougheed Mall.

5.4 Candidate South Fraser Sector Projects

The residents of the municipalities in this sector, Delta, Langley, and Surrey, all depend heavily on the employment opportunities provided in the municipalities of the adjacent Burrard Peninsula sector. The primary transportation issues are:

- o increasing congestion and delays at the bridgeheads and tunnel entrance leading to the north side of the Fraser River;
- o high volume of traffic on the two lane provincial segments of Highway 10 and the Fraser Highway;
- o lack of a direct link between the Tsawwassen Ferry Terminal and Highway 1 to the east;
- o lack of good access to the expanding port facilities and industrial areas along the south side of the Fraser River;
- o improving the frequency of local transit services; and
- o lack of any plans to provide additional capacity across the Fraser River to accommodate the future growth in travel demand across this screenline.

Candidate projects considered as possible solutions to the projected needs of this sector are:

- Twin Port Mann Bridge with new direct link to Lougheed Highway (north);
- Third tube at George Massey Tunnel;
- Widening of Highway 99;
- Extension of Knight Street South to Highway 99 at Steveston Road;
- New bridge across the Fraser River South Arm at 72nd Street connecting Highway 99 to the Richmond Expressway;
- New bridge across the Fraser River linking 156th Street to the Mary Hill Bypass;
- Widen Highway 10 to four lanes;
- Widen Fraser Highway to four lanes;
- New North Perimeter Road;
- New Bear Creek connector linking Nordell Way to Fraser Highway;
- New freeway connector linking Highway 17 directly to Highway 99;
- New connector linking Highway 99 to Highway 1;
- New interchange on Highway 99 at 152nd St. or at 24th Ave.;
- New interchange on Highway 1 at 216th Street;
- Bus priority access to Alex Fraser Bridge and;
- Bus only lane on Highway 99 northbound.

5.5 Candidate North East Sector Projects

The North East sector which includes Belcarra, Anmore, Port Moody, Coquitlam and Port Coquitlam, is also heavily reliant on the employment opportunities of the Burrard Peninsula. Because of the topography of the land separating these two sectors, there are a limited number of links connecting the two sectors. The predominant transportation issues of concern to this sector, therefore centre around this problem:

- o congestion and delays to commuters, buses, and goods movement vehicles on all routes linking this sector to Burnaby and Vancouver;
- o the need for a future east-west major arterial road north of Lougheed Highway, incorporating existing sections of David Avenue, serving future development between Pitt Meadows and Burrard Inlet;
- o the lack of direct, efficient transit service to employment centres in Burnaby and Vancouver;
- o the need to support intensive economic development in the North East Sector's Regional Town Centre;
- o the adverse impact of congestion in Port Moody's St. Johns St. corridor; and
- o projected future growth in population.

The candidate projects considered were:

- Widen Highway 1 between the Port Mann Bridge and Cassiar Street;
- Widen Lougheed Highway between the Pitt River Bridge and Boundary Road;
- Upgrade the Cape Horn interchange;
- New westbound connection from the Mary Hill Bypass to Highway 1;
- Upgrade the Broadway/Gaglardi Way/Hastings route;
- Widen Barnet Highway between Lougheed Highway and Ioco Road;
- Widen Barnet Highway between St. John's Street and Hastings Street;
- New Port Moody bypass;
- New waterfront road along the south side of Burrard Inlet;
- New Burrard Inlet crossing linking Ioco Peninsula to new waterfront road;
- New Pitt River crossing;
- New Commuter Rail service to Port Coquitlam;
- SkyTrain extensions to Lougheed Mall and Coquitlam Town Centre; and
- Bus lanes on a widened Barnet Highway and new waterfront road.

5.6 Evaluating the Alternatives

Each of the candidate projects were tested using the transportation model to determine the projected traffic volumes on the modified network under both 1991 and 2001 conditions. The results for each alternative in each geographic sector and across major screenlines were then compared and evaluated based on the following criteria derived from the Transportation Strategy.

Economic

- Capital cost of constructing the project
- Annual travel benefits including savings in travel time and vehicle operating costs
- Ratio of annual travel benefit to capital cost

Operational Effectiveness

- Average travel time savings
- Total peak hour travel time savings
- Number of new or additional users of the facility in the peak hour
- Extent of relief provided to other facilities
- Implications for transit use or operations

Other Impacts

- Environmental impacts.
- Community impacts.
- Support for municipal objectives.
- Ease of implementation with respect to engineering and property acquisition considerations.
- Benefit to goods movement.
- Network continuity.

6.0 RECOMMENDED TRANSPORTATION PLAN

6.1 2001 Road Network

All of the new facilities as well as the improved or upgraded facilities recommended to be included in the Road Network Plan for Greater Vancouver for the year 2001, over and above those elements already committed to be in place by 1991 (as documented in Section 4.3 and illustrated in Exhibit 4.3), are presented in Table 6.1. The location of each is illustrated in Exhibit 6.1. It should be noted that the locations shown are approximate only and more detailed planning work will need to be undertaken before specific alignments are identified.

6.2 Major New Road Network Facilities Beyond 2001

A number of the projects analyzed in the study are considered to have merit in the longer term but were not included in the final recommendations for the 2001 transportation plan as the construction of these facilities would not be justified in this time frame. It is therefore recommended that the Province and municipalities give serious consideration to including these projects in their long term transportation plans so that the necessary rights-of-way can be purchased and preserved now in order to ensure that new developments do not prevent the construction of these facilities in the future. The facilities in this category are as follows:

- Cambie St. Bridge - Highway 99 to Marine Drive;
- Boundary Road Bridge and freeway - Richmond Freeway to Highway 1 at Grandview Hwy.;
- 72nd St. Bridge - Highway 99 to the Richmond Freeway;
- Grandview Cut - extension from Clark Street to the Georgia and Dunsmuir Viaducts;

TABLE 6.1

RECOMMENDED ROAD NETWORK IMPROVEMENTS TO 2001

FACILITY	ACTION	SEGMENT	NO. OF LANES
Highway 1	Widen	2nd Narrows Bridge	8
	Widen	2nd Narrows - Lynn Creek	8
	Widen	Lynn Creek - Capilano Road	6
	Widen	1st Ave. - Port Mann	8
	New	Stormont - McBride Connector	4
	New	Westbound on-ramp from Mary Hill Bypass	4
	Widen/New	Widen or Twin Port Mann Bridge	4
	New	Port Mann - Lougheed North Connector	2
	Widen	Port Mann - 152 St.	8
	Widen	152 St. - 200 St.	6
	New	216 St. Interchange and Connectors	4
Lions Gate Bridge	New	Connector from Bridgehead - Hwy. 1	4
Lougheed	Widen	Boundary Road - Barnet Hwy.	6
Barnet Hwy.	Widen	St. Johns St. - Hastings St.	4
	New	Port Moody Bypass	4
Hastings St.	Widen	Barnet Hwy. - Boundary Rd.	6
Highway 10	Widen	Scott Rd. - 192 St.	4
	Widen/New	Langley Bypass - 232 St. Interchange	4
	New	Railway Grade Separation (Langley Bypass)	4
Highway 17	New	Direct connection to Highway 99 East	4
	Upgrade	Freeway Standards	
Fraser Highway	Widen	King George Hwy. - 176 St.	4
	New	Railway Grade Separation (Langley)	4
200th St.	New	Railway Grade Separation	4
Highway 91	New	Interchange at Hamilton St.	
	New	Interchange at 72nd Ave.	
Highway 91A	New	Interchange at Boyd St.	
	Upgrade	Interchange at Queensborough Bridgehead	
Highway 99	Widen	George Massey Tunnel	6
	Widen	Tunnel - Richmond Freeway	6
	New	Interchange at Blundell Rd.	
	New	Interchange at 152 St. or 24th Ave	
Granview Cut	Upgrade	Highway 1 - Grandview	4
	Widen	Boundary - Slocal	6
	New	Slocan - Clarke Drive	4
Low Level Road	Widen/New	Main St. - Marine Drive	4
North Perimeter Rd	New	Nordel Way - Highway 1	4
Knight St. Bridge	Widen	Bridgeport Rd. - Marine Dr. & Intersections	6
Mitchell Is. Access	New	Bridge and approaches from Marine Drive	2
Front Street	Widen	6th St. - Columbia St.	2
Columbia St.	Widen	Brunette - Front	6
Arthur Laing Bridge	New	Interchange at Russ Baker/Miller Road	2
River Road/River Way	Widen/New	Highway 99 - Nordel Way	4
72nd Ave.	Widen	Highway 91 - King George Hwy.	4

EXHIBIT **6.1**

RECOMMENDED ROAD NETWORK IMPROVEMENTS TO 2001

- o Highway 99 - Highway 1 freeway connector through Surrey and Langley;
- o David Avenue - extension to the west across Burrard Inlet and to the east across the Pitt River;
- o Waterfront Road - Barret Highway to downtown Vancouver.

The locations of these are shown in Exhibit 6.2.

6.3 Links To Adjacent Regional Districts

There are additional road network improvements that are recognized as being of importance to the Regional Districts adjacent to Greater Vancouver and will have implications for this region. Although not included in the list of projects presented in the 2001 network given in Table 6.1, they are noted as being potential links to Greater Vancouver's transportation network. These facilities are:

- o Abbotsford Airport-South Surrey link along either 16th Ave. or 24th Ave.;
- o new Pitt River crossing linking Pitt Meadows to the Mary Hill Bypass;
- o improving the "Sea to Sky Highway" between Horseshoe Bay and Lillooet via Squamish;
- o new Fraser River crossing linking Langley to Maple Ridge.

The locations of each of these are also shown in Exhibit 6.2.

6.4 2001 Transit Network

The improvements recommended for the transit network through to the year 2001 are as given in Table 6.2. The location of each of these is illustrated in Exhibit 6.3.

In order to implement many of these improvements, additional vehicles will be required. It is therefore recommended that B. C. Transit purchase 15 articulated buses and 25 regular buses each year for the next five years. These buses must be in addition to any buses required to replace vehicles that need to be retired.

6.5 Phasing of 1991-1996 Transportation Network Improvements

The previous sections have outlined the overall improvements to the road and transit networks recommended to be in place by the year 2001 in order to best meet the projected future travel demands. It is apparent that some of the recommended improvements are required as soon as possible while others can be delayed until toward the 2001 time horizon.

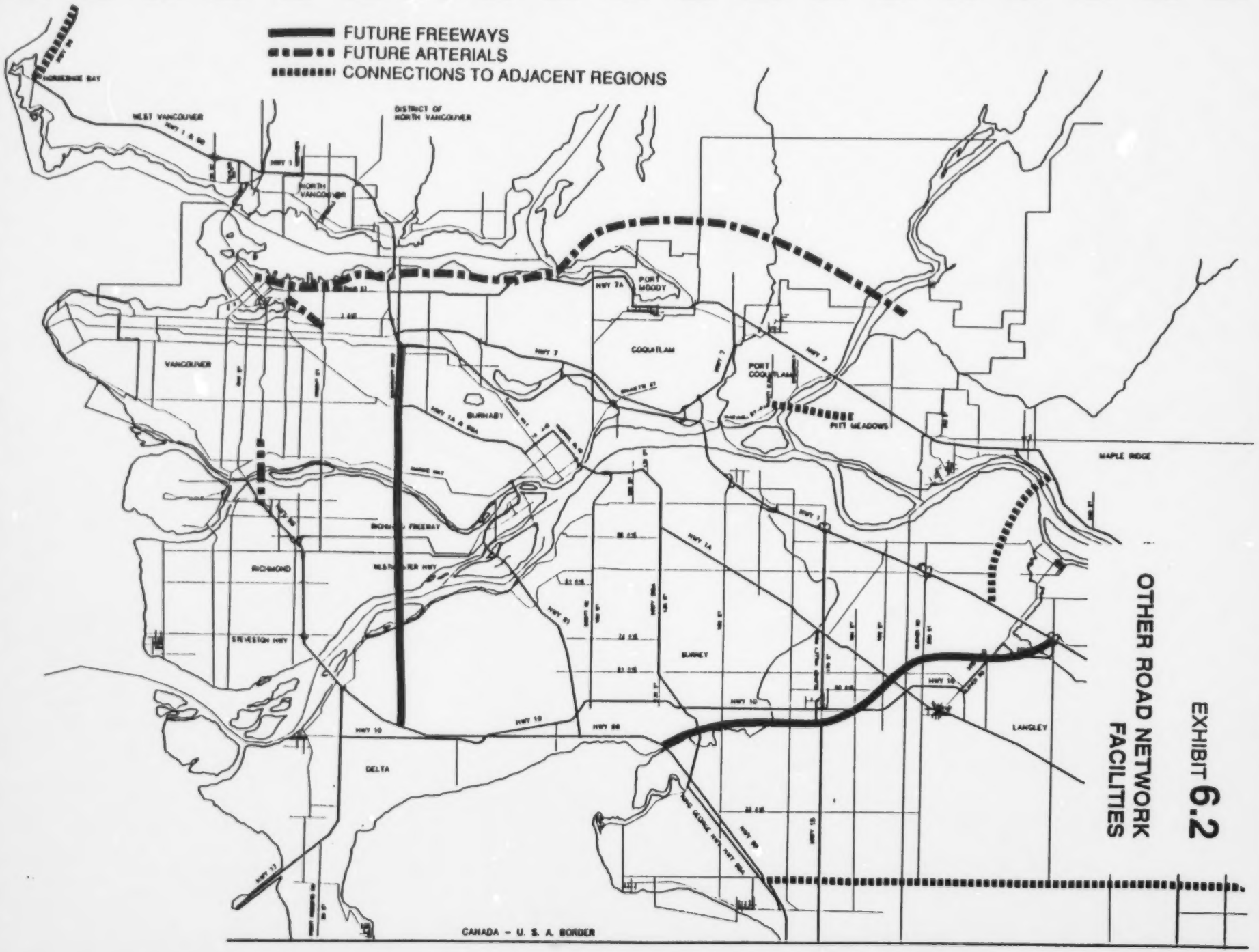


EXHIBIT 6.2

OTHER ROAD NETWORK FACILITIES

TABLE 6.2

RECOMMENDED TRANSIT NETWORK IMPROVEMENTS TO 2001

Rapid Transit	.	Vancouver to Richmond
SkyTrain Extension	.	To Coquitlam Town Centre via Lougheed Mall
Bus Lanes	.	Highway 99 Northbound and Southbound to the George Massey Tunnel
	.	Highway 91 northbound to Alex Fraser Bridge
	.	Hastings St. between Boundary Rd. and Vancouver's CBD
	.	Broadway between Cambie Street and Arbutus Street
	.	Granville Street between 16th Avenue and the Granville Street Bridge
Bus Priority Measures	.	Direct access from Phibbs Exchange to Second Narrows Bridge
	.	Queue jumper for vehicles accessing the Barnet Highway from St. John's Street
	.	Queue jumper for buses on McGill Street ramp at approach to Second Narrows Bridge
SeaBus Service	.	Addition of a back-up vessel
Upgraded Bus Service	.	All areas of Surrey to Scott Road and Whalley Stations South Delta and Richmond to new Richmond LRT Stations
	.	Port Coquitlam and Coquitlam to Vancouver's CBD and to New Westminster Station prior to opening of the SkyTrain extension to Coquitlam Town Centre
	.	North Shore to SeaBus Terminal
	.	North Shore to Phibbs Exchange and Vancouver's CBD
Park and Ride Facilities (at grade or multi-level)	.	Phibbs Exchange
	.	Capilano & Marine Drive
	.	East Guildford
	.	South Surrey
	.	Westminster No. 3 Road Station
	.	Coquitlam Town Centre
	.	Lougheed Mall
	.	Kootenay Loop or P.N.E.
	.	22nd Street Station
	.	Metrotown Station
	.	North Delta
Trolley Extensions	.	Broadway Express Lane
	.	Burrard Bridge
	.	East Hastings
Transit Exchanges	.	Coquitlam Town Centre
	.	Scottsdale Mall
	.	White Rock/South Surrey

EXHIBIT **6.3**

RECOMMENDED TRANSIT NETWORK IMPROVEMENTS TO 2001

Each of the specified improvements was therefore analyzed in more detail to determine, firstly, whether they should be constructed in the 1991-1996 or 1997-2001 time periods, and secondly, the priority and therefore the order in which those recommended to be constructed in the 1991-1996 time period should be implemented. The results of this analysis for the road network and the transit system are presented in Tables 6.3 and 6.4 respectively. The suggested year in which the planning and design stages of each of these projects should be undertaken together with a preliminary estimated construction cost are also given in these tables.

The construction cost of the road network improvements included in the three priority categories are as follows:

Priority #1	-	$380 million
Priority #2	-	$265 million
Priority #3	-	$210 million

Although no suggested timing has been given for the facilities recommended to be constructed in the 1997-2001 time period, many of these will require planning and design to be undertaken within the 1991-1996 time period in order to preserve the required right-of-way.

7.0 POLICY ISSUES

It is apparent that if the transportation system in Greater Vancouver is to be planned, operated and used in the most efficient manner, the Province of British Columbia must take the lead in resolving many policy issues raised in this study. Cooperation with federal and municipal governments is an essential part of this process.

The most important priority is the establishment of an integrated planning process that brings together the objectives of all orders of government and addresses itself to all modes of transportation. A key objective of this process should be to identify, classify and develop the region-wide transportation networks so that the evolution of regional transportation systems is not unduly hampered by geographic or jurisdictional boundaries.

This approach should also be reflected in the funding of capital improvements to the transportation system. The concept of a single capital budget for transportation has the merit of establishing a level playing field for the competing priorities of agencies involved in roads, transit and goods movement. It has the capability of achieving a better fit between provincial, municipal and cost-shared road facilities.

The Province of British Columbia is the only governmental jurisdiction with the mandate to develop and implement regional transportation improvements. It follows from this fact that the Province should fund all the regional improvements proposed in this report on the same basis, even if some of the facilities are constructed by municipalities. It also follows that the same formula should apply to both road and transit improvements.

TABLE 6.3

PRIORITY ROAD NETWORK IMPROVEMENTS 1991-1996

IMPROVEMENT		Construction Cost	Priority	90	91	92	93	94	95	96
Highway 1	Widen 2nd Narrows Bridge	$ 55M	1	P	D	C				
	Widen Hwy. 2nd Narrows - Keith	$ 20M	1	P	D	C				
	Widen Hwy. 1st Ave. - Kensington	$ 80M	1	P	D	C				
	Widen Hwy. Kensington - Brunette	$ 70M	1		P	D	C			
	New Stormont - McBride Connector	$ 15M	3		P		D	C		
	Widen Hwy. Brunette - Port Mann	$ 40M	1		P	D	C			
	New Wdnd on-Ramp Mary Hill	$ 30M	1		P	D		C		
	New 216 St. Interchange	$ 10M	3					P	D	C
Barnet Hwy.	Widen St. Johns St. - Hastings	$ 30M	1	P	D	C				
	Port Moody Bypass	$ 50M	2			P	D		C	
Hastings St.	Widen Barnet Hwy. - Boundary Rd.	$ 10M	1	PD	C					
Highway 10	Widen Scott Rd. - 160 St.	$ 15M	2	P	D		C			
	Widen 160th St. - 192 St.	$ 10M	3				P	D	C	
	Langley Bypass - Hwy. 1	$ 10M	3			P		D		C
	Grade Separate Rail Crossings	$ 15M	2		P	D		C		
Highway 17	Direct Connection To Hwy. 99	$ 20M	3		P	D	C			
	Upgrade to Freeway Standards	$ 10M	2			P	D	C		
Highway 91	New Interchange at Hamilton	$ 10M	2			P	D	C		
	New Interchange at 72nd Ave.	$ 5M	3					P	D	C
Highway 91A	New Interchange at Boyd	$ 10M	1	PD	C					
	Upgrade Queensborough Int.	$ 20M	1		P	D	C			
Highway 99	Widen George Massey Tunnel	$ 75M	2		P	D		C		
	Widen Tunnel - Richmond Freeway	$ 10M	2			P	D	C		
River Road	Hwy. 99 - Nordel Way	$ 10M	3			P	D		C	
Knight St.	Widen Bridge & Intersections	$ 40M	3					P	D	C
Mitchell Is.	New Access Bridge	$ 10M	3			P		D		C
Grandview Cut	Upgrade Hwy. 1 - Grandview	$ 15M	1	PD	C					
	Slocan - Clarke Drive	$ 45M	2				P	D	C	
Low Level Rd.	Main - Esplanade	$ 10M	3			P	D		C	
	Esplanade - Welsh	$ 15M	2			P		D	C	
	Welsh - Marine Drive	$ 20M	3				P		D	C
N. Perimeter Rd.	River Road - Hwy. 1	$ 50M	3				P		D	C
Front Street	Widen Sixth - Columbia	$ 15M	2	PD	C					
Columbia St.	Widen Front - Brunette	$ 5M	2	PD	C					
		$855M								
	Cost/Year Planning			5	6	2	2	1	0	0
	($ M) Design			4	14	19	6	6	5	0
	Construction			0	55	185	165	165	140	145

Note: 1) Cost figures are in millions of dollars in 1989 values and include land acquisition where applicable.

2) Construction cost of road network improvements for 1997-2001 estimated at $380M.

Rev. 2

TABLE 6.4

TRANSIT SYSTEM IMPROVEMENTS 1991 - 1996

IMPROVEMENT		Capital Cost ($M)	90	91	92	93	94	95	96
Rapid Transit	Vancouver - Richmond	$510M	P	D	C	C			
SkyTrain Ext.	To Lougheed Mall	($225M)			P		D		
	To Coquitlam Centre	($280M)				P			D
Bus Priority Measures (Bus Lanes)	Hwy. 99 Northbound to Tunnel	$ 2M	PDC						
	Hastings St.: Boundary - Vanc. CBD		DC						
	Hwy. 91 Nbnd Access to Alex Fraser Bridge	$ 2M	PD	C					
	Broadway: Cambie St. - Arbutus St.		DC						
	Granville St.: 16th Ave. - Granville St. Br.		DC						
	Direct Access Phibbs - Sec. Narrows	$ 1M	P	D	C				
	St. Johns St. - Barnet Hwy. queue jumper	$ 1M	PDC						
	McGill St. - Sec. Narrows Br. queue jumper	$ 4M	PDC						
Park & Ride Facilities	Coquitlam Town Centre	$ 4M	C						
	Lougheed Mall	$ 4M			C				
	South Surrey	$ 4M	C						
	22nd St. Station	$ 4M			C				
	Phibbs Exchange	$ 4M		C					
	Richmond	$ 7M				C			
	Kootenay Loop	$ 4M					C		
	Metrotown	$ 4M		C					
	Lonsdale Quay	$ 4M	C						
SeaBus	Additional Vessel	$ 8M			C				
Upgraded Bus Services	20 Articulated Buses and 20 Buses per year	$ 10M/yr.	C	C	C	C	C	C	C
Transit Exchanges	Coquitlam Town Centre	$ 1M	C						
	Scottsdale Mall	$ 1M		C					
	White Rock/South Surrey	$ 1M			C				
		$640M							
	Cost/Year Construction		30	21	283	272	14	10	10

Note: 1) Cost figures are in millions of dollars in 1989 values and include property acquisition where applicable.

2) SkyTrain extensions to Lougheed Mall and Coquitlam Centre to be constructed in 1997-2001 - capital cost figures given for comparison purposes only.

Rev. 2

There is scope for improvement to the Revenue Sharing program which provides assistance to municipalities for road improvements. Possible areas to be considered are simplification of eligibility criteria, provision of earlier notice of funding and better year-to-year consistency of funding levels.

Although matters relating to air, rail and marine modes have not been addressed in depth during Phase 1, the Task Force has identified two issues relating to airport and port development which are of importance to the planning of road and transit improvements.

First, it is important to protect road and rail access corridors to the region's ports. This is one of the most important reasons for undertaking the integrated port development strategy which the Task Force has recommended. As the region continues to grow, the access needs of ports can only be met if the long-term development plans of the ports are known and agreed between the various orders of government.

Second, the Task Force has noted that the planning process now under way for expanded "airside" capacity at Vancouver International Airport could have immediate implications for road and transit improvements which are a high priority for early implementation. Accordingly, the Task Force supports the acceleration of this planning process, including the necessary environmental impact assessments. It is also clear that a longer-term plan is needed for the development of the entire system of airports in the Lower Mainland to ensure the necessary facilities are available to meet air travel requirements with a minimum of community and environmental impact. The responsibility of the Province and municipalities for ground access to airports must be considered in the development of this plan.

The above comments serve to emphasize the fact that the work of the Task Force is merely the beginning of an ambitious but essential effort to ensure that the residents and businesses of Greater Vancouver are served by the most modern, efficient and cost-effective transportation system.

8.0 RECOMMENDATIONS

The following are the recommendations of the Greater Vancouver Transportation Task Force resulting from Phase I of the transportation study undertaken for the region:

8.1 Government Policy:

1. That the Provincial Government establish an ongoing transportation planning process for Greater Vancouver involving all orders of government and all modes of transport.

2. That the Provincial Government establish a single capital budget process for improving both the road and transit systems in Greater Vancouver.

3. That the Provincial Government recognize in its funding policies that rapid transit systems are the equivalent of provincial arterial highways and apply to the financing of existing and proposed rapid transit facilities, the same principles used to finance the construction of highways.

4. That the Provincial Government consider all components of the recommended transportation plan to be of regional significance and therefore the cost of each should be fully funded on the same basis as provincial highways.

5. That the Provincial Government examine revisions to the Revenue Sharing program for municipal roadway assistance with a view to simplifying the criteria, providing earlier notice of funding and improving the equitability and year-to-year consistency of funding levels.

6. That the Provincial Government consider increased use of transportation consumption taxes such as fuel taxes and license fees as a means to manage the demand for transportation improvements and to fund needed improvements.

7. That the Provincial Government encourage the three port authorities in the Lower Mainland to produce a coordinated port development strategy and to plan for the Greater Vancouver region as a guide for provincial and municipal programs to provide and protect road and rail access to port installations.

8. That the Provincial Government request the Government of Canada to initiate a formal environmental impact assessment study of the airside capacity improvements proposed for Vancouver International Airport.

9. That the Provincial Government request the Government of Canada to prepare a strategy for longer-term development of airport infrastructure in the Lower Mainland.

8.2 Improvements to Public Transit

10. That the B.C. Transit give priority to completing the detailed planning with a view to achieving the earliest possible introduction of a rapid transit service between downtown Vancouver and the Richmond Town Centre.

11. That B.C. Transit begin the detailed planning of the extension of the existing SkyTrain service to Coquitlam Town Centre via Lougheed Centre in two phases in order that such a service can be in operation within the 1996 - 2001 time period.

12. That the proposed commuter rail service linking Port Coquitlam to downtown Vancouver using CP rail tracks not be implemented so that priority can be given to more cost-effective steps to address the transportation needs of the North-east sector.

13. That the Vancouver Regional Transit Commission be encouraged to pursue vigorously its objective of achieving an increase in transit's share of the modal split throughout the region, particularly during the morning and evening peak periods.

14. That the Vancouver Regional Transit Commission consider alternative means of encouraging the use of transit for short distance travel in downtown Vancouver and the Regional Town Centres.

15. That the Provincial Government coordinate a review with appropriate agencies of the possibilities for the expanded use of taxis for paratransit and custom transit services.

16. That the Provincial Government, in cooperation with local municipalities and private developers and/or parking facility operators, establish park-and-ride facilities at:

(a) Phibbs Exchange	(f) Coquitlam Town Center
(b) Capilano Road & Marine Dr.	(g) Lougheed Mall
(c) Metrotown Station	(h) East Guildford
(d) South Surrey	(i) 22nd St. Station
(e) Westminster/No. 3 Rd. Station	(j) North Delta

17. That B.C. Transit establish new transit exchanges at Coquitlam Town Centre, Scottsdale Mall and White Rock/South Surrey.

18. That B.C. Transit request Greater Vancouver municipalities to consider applying parking restrictions and other traffic management measures during peak periods in both directions on all sections of municipal arterial roads that are used as major bus routes, that is, have 15 or more buses per hour in the peak direction.

19. That B.C. Transit purchase a minimum of 20 articulated buses and 20 standard buses in each of the years 1990 to 1996 to be used to increase the level of service in Greater Vancouver, particularly on commuter routes. This is in addition to the 170 buses required to replace those vehicles that need to be retired.

8.3. Roadway Network Improvements 1991-1996

20. Road Upgradings: that the provincial government begin the next stages of planning for upgrading the following existing facilities before the end of 1996:

    (a) widening of the deck of the Second Narrows Bridge to eight lanes;

    (b) widening of Highway 1 together with associated improvement of the grade-separated interchanges and access roads between the Lynn Creek and the Second Narrows Bridge;

(c) widening of Highway 1 to 8 lanes and associated construction or improvement of grade-separated interchanges and access roads between First Avenue and the west end of the Port Mann Bridge, including a direct westbound on-ramp from the Mary Hill Bypass;

(d) widening of Barnet Highway to four lanes between Clarke Road and Hastings Street;

(e) selective widenings and intersection treatments on Hastings St. between Barnet Highway and Boundary Road to achieve three through lanes in each direction;

(f) reconstruction of the existing interchange at the north bridgehead of the Queensborough Bridge;

(g) widening of the George Massey Tunnel to six lanes by constructing a new two-lane tube;

(h) widening of Highway 99 between the tunnel and the Richmond Freeway together with additional improvements to maximize the utilization of the expanded tunnel;

(i) widening of Front St. to two lanes between Sixth St. and Columbia St. and of Columbia St. to 6 lanes between Front St. and Brunette Ave.;

(j) widening of Highway 10 to four lanes between Scott Road and the Langley Bypass and between the Langley Bypass and the Highway 1 interchange at 232nd St;

(k) widening of River Road and/or the construction of the proposed River Way to four lanes between Highway 99 and Nordel Way;

(l) widening of Knight St. Bridge to six lanes and replace the existing ramps to Mitchell Island from this bridge with a new bridge to the island directly off Marine Drive;

(m) widening of 72nd Avenue to four lanes between Highway 91 and Scott Road;

(n) provide left turn treatments on arterial roads of regional significance at all signalized intersections; and

(o) upgrade Highway 17 to full freeway standard by eliminating all at-grade intersections.

21. New Facilities: That the Provincial Government begin the next stage of planning in order to have the following new facilities in operation before the end of 1996:

(a) interchange on Highway 91A at Boyd Street;

(b) interchange on Highway 91 at Hamilton Road and 72nd Avenue;

(c) four-lane Port Moody Bypass linking Barnet Highway north of St. Johns St. to Barnet Highway in the vicinity of Ioco Road;

(d) railway grade separations on Highway 10 (on the Langley Bypass) and on the Fraser Highway;

(e) Grandview Cut between Renfrew St. and Clarke St., together with the upgrading of the connection between Highway 1 and the east end of Grandview Hwy.;

(f) Stormont-McBride Connector;

(g) interchange on Highway 1 at 216th Street;

(h) direct freeway connection between Highway 17 and Highway 99;

(i) Low Level Road on the North Shore between Main St. at Third Avenue in North Vancouver and Marine Drive west of Park Royal in West Vancouver; and

(j) North Perimeter Industrial Road in Delta and Surrey between River Road at Nordel Way and Highway 1 at 176 Street.

22. Transit Priority Measures: That the Provincial Government implement or request the appropriate municipalities to implement the following improvements to the road network in order to provide increased priority to transit vehicles using the roadway system:

(a) bus only lanes both southbound and northbound on Highway 99 on the approaches to the George Massey Tunnel;

(b) bus priority measures in both directions on Hastings St. between Boundary Road and downtown Vancouver in the peak periods;

(c) direct access from the Phibbs Exchange to the Second Narrows Bridge;

(d) bus only lane or equivalent priority measure for buses on Highway 91 approaching the Alex Fraser Bridge northbound;

(e) queue jumper for vehicles accessing the Barnet Highway from St. Johns St.;

(f) queue jumper lane on the new McGill St.-Second Narrows Bridge ramp for buses travelling between downtown Vancouver and the North Shore;

(g) bus priority measures in both directions on Broadway between Cambie St. and Arbutus St. in the peak periods; and

(h) bus priority measures in both directions on Granville St. between 16th Ave. and the Granville St. Bridge in the peak periods.

8.4. Road Improvements 1997 - 2001:

23. That the Provincial Government undertake the necessary steps in order to have the following new or improved facilities in operation as components of the road network within the period 1997-2001:

(a) widen or twin the Port Mann Bridge to provide an additional four lanes;

(b) widen Highway 1 to six lanes between Lynn Creek and Capilano River;

(c) widen Highway 1 from Port Mann Bridge east to 152nd St. to eight lanes and further east to 200th St. to six lanes;

(d) widen Lougheed Highway to six lanes between Boundary Road and Barnet Highway;

(e) grade separate the junction of the Arthur Laing Bridge, Russ Baker Way and Miller Road;

(f) widen Fraser Highway to four lanes to Highway 10;

(g) interchange on Highway 99 at 152nd St. or 24th Ave., providing improved access to South Surrey and White Rock;

(h) construct new railway grade separation in Langley on 200th St.; and

(i) construct a new road connecting Lions Gate Bridge to Highway 1.

8.5. Longer Term Facilities:

24. That the following proposals be examined in the longer-term planning of municipalities and the provincial transportation agencies:

(a) a new Cambie St. Bridge across the Fraser River North Arm connecting Highway 99 to Cambie St. at Marine Drive.

(b) a new freeway link connecting Richmond Freeway to Highway 1 along the line of Boundary Road with a new bridge across the Fraser River North Arm;

(c) a new freeway link connecting Highway 99 to the Richmond Freeway with a new bridge across the Fraser River South Arm along the line of 72nd St. in Delta and Number 8 Road in Richmond;

(d) an extension of the Grandview Cut west across the existing railway yards to connect directly to the Georgia and Dunsmuir Viaducts;

(e) new freeway linking Highway 99 in Surrey to Highway 1 in Langley;

(f) a new bridge at either end of David Avenue to extend it to the west across Burrard Inlet and to the east into Pitt Meadows; and

(g) a new waterfront road along the south shore of Burrard Inlet connecting the Barnet Highway in Burnaby to downtown Vancouver.

25. That the Provincial Government and municipalities ensure that all abandoned rail corridors are considered for possible future use in the transportation network.

8.6. Inter-regional Facilities:

26. That the following transportation projects be noted as being of importance to neighbouring Regional Districts and hence having implications for Greater Vancouver:

    (a) constructing a new bridge crossing of the Pitt River connecting Pitt Meadows to the Mary Hill Bypass;

    (b) improving the Sea to Sky Highway between Horseshoe Bay and Lillooet via Squamish;

    (c) constructing a new bridge crossing of the Fraser River connecting Maple Ridge to Langley; and

    (d) upgrading 16th Ave. or 24th Ave. between Abbotsford and Highway 99.

8.7. Other Matters

27. That the report of the Goods Movement Working Group be referred to municipal Councils as a guide to municipal policy-setting relating to urban goods movement.

28. That the Provincial Government take the leadership role in establishing a goods movement council for Greater Vancouver.

29. That representatives from the federal and provincial transportation ministries review and promulgate the protocols for grade separations for both federal and provincial railways, in order to ensure equitability of funding for grade separation.

30. That the Provincial Government develop measures to ensure that truck safety, weight limit, noise and fume emission standards are enforced.

31. That the Greater Vancouver municipalities jointly investigate measures to control vehicle traffic through residential neighborhoods.

32. That municipal, regional and provincial transportation planning agencies consult more fully with representatives of cycling associations in Greater Vancouver, with a view to the better integration of cyclists' needs into the overall transportation planning process.